

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Amendment of the Commission's Rules with)	GN Docket No. 12-354
Regard to Commercial Operations in the)	
3550-3650 MHz Band)	

**COMMENTS OF MOTOROLA SOLUTIONS, INC. IN RESPONSE TO PETITIONS
FOR RULEMAKING**

Motorola Solutions, Inc. (“Motorola Solutions” or “MSI”) hereby files these comments in response to the petitions for rulemaking filed by CTIA and T-Mobile to modify the service rules and licensing requirements for the Citizens Broadband Radio Service (“CBRS”) at 3550-3650 MHz.¹ As it considers these possible rule changes to the CBRS, Motorola Solutions urges the Commission to preserve the fundamental balance it struck to ensure that the band provides access opportunities to the widest array of users and applications. To that end, and as further discussed below, Motorola Solutions urges the Commission to: 1) retain licensed service areas that are much smaller than the proposed partial economic areas (“PEAs”) for CBRS Priority Access tier licenses; 2) limit the term of Priority Access licenses to no more than 5 years; and 3) continue to ensure that General Authorized Access users have reserved spectrum in all service areas.

Motorola Solutions has been an active participant in this proceeding since its inception and has provided strong support for the Commission’s innovative approach to enable opportunistic sharing of the CBRS spectrum. Shared access provides realistic opportunities for

¹ See CTIA, Petition for Rulemaking, GN Docket No. 12-354, filed June 16, 2017 (“CTIA Petition”); T-Mobile USA, Inc., Petition for Rulemaking, GN Docket No. 12-354, filed June 19, 2017 (“T-Mobile Petition”).

organizations in addition to large commercial wireless carriers to utilize the CBRS spectrum for private and secure broadband networks designed to meet communications needs over campus environments. MSI believes that there are a variety of industrial and enterprise sectors such as oil & gas companies, utilities and other critical infrastructure entities, industrial and manufacturing, mining, hospitality, and others that would benefit from the regulatory structure developed by the Commission.

As adopted, the CBRS framework generally consists of two access tiers below the Incumbent Tier of spectrum users — Priority Access and General Authorized Access (GAA). Priority Access Licenses (PALs) will provide authority to use a 10 megahertz channel in a single census tract for three years (or six years for the first auction) and will be assigned in up to 70 MHz of the 3550-3650 MHz portion of the band. Most importantly, Priority Access operations will receive interference protection from GAA and other PAL operations, which can help ensure high quality of service (QoS) communications. In contrast, GAA use will be allowed opportunistically throughout the 3.5 GHz band and will not be guaranteed interference protection from other CBRS users. All CBRS users must protect the Incumbent Tier of users in the band (Federal radar installations, fixed satellite services and grandfathered Part 90 subpart Z users in the 3650-3700 MHz sub-band).

As adopted, the regulatory framework for the CBRS balances the needs of multiple industry segments in order to accommodate innovation. Motorola Solutions appreciates the Commission's efforts throughout this proceeding and would prefer to continue implementation under the existing rules. Nonetheless, MSI understands that the CBRS spectrum hierarchy is a complex arrangement and therefore does not oppose further consideration of limited and appropriate "tweaks" to the spectrum access rules. In so doing, however, the Commission

should continue to maintain a balanced approach that does not undermine the potential diversity of uses within the band.

In Motorola Solutions' view, the CTIA Petition and the T-Mobile Petition could significantly alter the Commission's innovative approach to regulating the CBRS band in three key areas. First, both petitions ask that the size of the PAL service areas be increased from the existing census tracts to partial economic areas ("PEAs"). Second, both petitions seek to lengthen the term of the PAL license term from 3 to 10 years, with unlimited renewability. Finally, the T-Mobile Petition proposes to eliminate the rule restricting PAL licenses to no more than 70 MHz of the available 150 MHz in each service area. Taken together, these three proposals could largely eliminate the availability of the CBRS band for private and secure broadband networks.

Motorola Solutions continues to support the use of census tracts in order to maximize opportunities for smaller, private interference-protected uses of the band. Increasing PAL service areas to encompass PEAs will make the interference protected tier of spectrum cost-prohibitive for all but the largest entities. Many of the proposed PEA license areas contain over 1 million people, which is not well aligned with the market for high QoS, small-cell private broadband systems. At auction, the cost of the proposed PAL licenses would surely exceed millions of dollars, which is well out of reach of many smaller private uses.

Reducing the number of available PAL service areas from more than 74,000 census tracts to 416 PEAs as proposed would change the fundamental nature of the band by eliminating almost all opportunity for interference-protected, private and secure broadband applications that the Commission has long promoted. We believe the Commission should provide at least several thousand priority access license areas nationwide in order to facilitate a wide range of private

broadband use cases. We are concerned that secondary markets for PAL sub-licensing offer no guarantees or assurances that the primary PAL holders will lease idle, interference-protected spectrum to other users, and thus will not be a viable option for providing access for other innovative uses of the spectrum. This is especially true for high QoS spectrum uses that may compete with large cellular carrier businesses.

Both T-Mobile and CTIA propose to extend the PAL license term to 10 years with expectation of renewability. Coupled with T-Mobile's proposal to eliminate the rule that restricts PAL licenses to no more than 70 MHz of the available 150 MHz in each service area, these recommendations would further limit spectrum availability to smaller private entities seeking to deploy high QoS broadband networks.

GAA spectrum in the upper portion of the band is already encumbered by a wide variety of incumbent users (*e.g.*, FSS and Part 90 users) and will be limited in some areas. We believe that GAA spectrum will be important for many less critical applications, and should be preserved as much as possible. Limiting the maximum amount of PAL spectrum to the currently proposed 70 MHz will help alleviate this issue.²

Extending the term of the PAL licensees to 10 years (with an expectation of renewal) would ensure that valuable interference protected spectrum would be controlled by single entities for extended periods of time, without any competition in large areas. While the rules do permit GAA usage in unused PAL areas, GAA devices and systems must be able to tolerate interference

² Motorola Solutions does support T-Mobile's proposal recommending the Commission to auction as many Priority Access Licenses as there are applicants, up to the current limit of 70 MHz of spectrum, and to allow PAL bidders to specify the actual channels that they are bidding on in a license area, to better quantify the risks associated with PAL spectrum auctions. T-Mobile Petition at 13-15.

by rule without any defined limits.³ Shoe-horning GAA applications in-between PAL networks will not provide interference protection guarantees for high QoS or business critical services, which we expect to be important in the band. Locking in long (or even perpetual) interference protected licenses to a limited number of entities will stunt innovation in the band.

Recognizing that balancing competing needs sometimes requires a degree of compromise, should the Commission choose to lengthen the PAL license term, we suggest extending the term to no more than a 5-year term, with a single (one-time) license renewal allowed. This will help to ensure a healthy market for interference protected spectrum. We note that CTIA previously provided support for 5-year PAL terms.⁴

MSI understands the positions of the wireless carriers seeking to reduce their risks as they continue building out nationwide networks using small cell technology. However, their proposals leave fewer opportunities for alternative uses that also require some certainty that investments made won't be stranded when the PAL licensee decides to exert spectrum primacy over GAA operations. Improved secondary market functionality and enhanced rights for others to access "unused areas" of PAL areas could help address these concerns. Should the Commission choose to expand the rights of PAL licensees as proposed by CTIA and T-Mobile, it should consider more robust secondary market policies to promote additional PAL access through sub-leasing in fallow areas under PAL control.

Finally, Motorola Solutions does not support modifying the CBRS transmit spectral mask limits, which have been carefully chosen and vetted based on allowable interference to many

³ 47 C.F.R. §§ 96.35(b) - (d).

⁴ Petition for Reconsideration of CTIA – The Wireless Association, WT Docket No. 12-354, July 23, 2015, at 1.

incumbents in the band.⁵ We believe that several state-of-the-art technologies (*e.g.*, amplifier pre-distortion and other linearization techniques, judicious scheduling algorithms, *etc.*) can be utilized to help meet the current spectral mask, and no special transmit mask relaxations are necessary. We also note that wider bandwidth systems are already allowed to transmit with higher power levels under the current rules, which would help to counteract any A-MPR (Additional Maximum Power Reduction), if utilized.

Respectfully submitted,

/s/ Chuck Powers

Chuck Powers

Director, Engineering and Technology Policy

Motorola Solutions, Inc.

1455 Pennsylvania Ave, NW

Washington DC 20554

(202) 371-6904

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⁵ T-Mobile Petition at 21.